

SCIENCE MISSION DIRECTORATE POLICY

MANAGEMENT OF ROSES PEER REVIEW AND SELECTION PROCESSES SMD POLICY DOCUMENT SPD-22

Policy document approved by John M. Grunsfeld, Associate Administrator for SMD, on July 10, 2012.

Responsible SMD Official: Assistant Associate Administrator

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Principles of SMD's Research and Analysis (R&A) Peer Reviews

- SMD manages its R&A programs strategically, increasing the return from missions in progress or completed, and laying the groundwork for missions yet to be initiated.
- SMD seeks the input of the scientific community, as appropriate, in evaluating the scientific/technical merit, programmatic relevance, and cost reasonableness and realism of proposals.
- SMD places the highest value on fair, unbiased, unconflicted, and competent reviews of all compliant and responsive proposals submitted.
- SMD protects the confidentiality of proposers and reviewers, as well as the sensitive and proprietary content of proposals.
- SMD strives to provide clear feedback to proposers in a timely fashion, including the disposition of the proposal and the major factor(s) that led to the acceptance or rejection of the proposal.
- SMD entrusts its Program Officers with the responsibility and the authority to implement its principles and policies and to present well-supported selection recommendations to the Selection Official.
- SMD charges its Selection Officials with advancing NASA's strategic goals and maximizing the science return within programmatic constraints by executing their judgment in making selection and nonselection decisions.

1. Overview

This document describes the roles and responsibilities involved in the SMD peer review process and includes definitions of commonly used terms and acronyms. An appendix is included to convey suggested practices. SMD uses peer review by subject matter experts (SMEs) to evaluate proposals submitted to the directorate. Proposals for research awards are normally submitted in response to the Research Opportunities in Space and Earth Science (ROSES) omnibus solicitation via the NASA Solicitation and Proposal Integrated Review and Evaluation System (NSPIRES) web interface. The quality of a peer review is determined by the fairness and competence of the reviewers; the adherence of the reviewers to evaluation criteria and factors; and the degree to which the written panel summary fully and clearly captures the findings of the review panel members.

2. Authority

- a. 42 U.S.C. 2473(c)(1), Section 203(c) (1) of the National Aeronautics and Space Act of 1958, as amended
- b. NPD 7120.4, Program/Project Management

3. Applicable Documents

- a. NPR 7120.8 NASA Research and Technology Program and Project Management Requirements
- b. Science Mission Directorate (SMD) Management Handbook
- c. SPD-01A: Handling Conflicts-of-Interest for Peer Reviews
- d. SPD-02: Handling Late Proposals
- e. SPD-05: Preventing Financial Conflicts for IPA Employees
- f. SPD-08: Requirements for Selection Decision Documents for NASA Research Announcements including ROSES
- g. SPD-09: Requesting Reconsideration of NRA Proposal Declination

4. Definitions

- 4.1 **Review** - The term "review" may also be used to refer to the end-to-end process of evaluation of proposals from receipt of proposals to final selection. Some people call the review a "panel review" or "peer review." The review may consist of more than one panel depending on how the proposals are grouped for discussion.
- 4.2 **Individual review or individual evaluation** is the evaluation of a proposal produced by a single reviewer (panel or nonpanel) without discussion of the proposal with any other reviewer, i.e., prior to or separate from the panel.

- 4.3 **Program Officer** is the Civil Servant responsible for a (panel) review. See Section 5.1.
- 4.4 **Panel Official** is a Civil Servant to whom some of the functions of the Program Officer have been delegated for a specific panel in a larger review.
- 4.5 **Review Chief** (or Super Chair) is a person to whom some of the functions of the Program Officer have been delegated for the purpose of helping to organize a review. This person need not be a Civil Servant.
- 4.6 **Review Panel** is a group of subject matter experts asked by NASA to review, discuss, and provide comments on a subset of proposals in a review.
- 4.7 **Panel Reviewers** are the members of a panel. Panel reviewers are assigned to a specific panel and given responsibility for particular proposals within that panel prior to the meeting/review.
- 4.8 **Panel Chair** is an individual chairing a panel within a review. See section 5.4. This person need not be a Civil Servant, but it is advantageous if they are.
- 4.9 **Panel Secretary** is an individual designated to support the review (e.g., record panel discussions and/or actions). This optional helper is typically a postdoctoral or senior graduate student. Responsibilities may differ from Division to Division.
- 4.10 **Primary Reviewer** is the panelist assigned to lead discussion of a proposal in a panel and normally is also responsible for drafting the panel summary.
- 4.11 **Secondary Reviewer** is a panelist assigned to read and evaluate a proposal, participate in discussions of that proposal in a panel, and aid the Primary Reviewer in drafting the panel summary.
- 4.12 **Panel Summary** is the final document that the panel provides to the program officer containing their assessment of the proposal. This is not a consensus product of a panel, but a compilation of the views of individual panelists, informed by the panel discussion.
- 4.13 **Nonpanel Reviewer/Mail-in Reviewer** is a technical expert who reviews proposals and provides independent input, but does not attend any panel meeting for a review.

Caveat: Sometimes the above roles are overlapping. For example, if a review involves only one panel and the NASA HQ program officer chairs that panel, then the NASA HQ program officer is the review chief and the panel chair, etc.

Acronyms

IPA	Intergovernmental Personnel Act Employee <ul style="list-style-type: none">• Has the authority of a Civil Servant;• Can serve any role that requires a Civil Servant, such as Program Officer and Panel Official; and• Shall follow the requirements of SPD-05, “Preventing Financial Conflicts for IPA Employees,” when participating in a peer review in any role.
NPD	NASA Policy Directive
NPR	NASA Procedural Requirements
R&A	Research and Analysis
ROSES	Research Opportunities in Space and Earth Science (omnibus solicitation)
SMD	Science Mission Directorate
SPD	SMD Policy Document

5. Roles and Responsibilities

- 5.1 The Program Officer has responsibility and authority for all aspects of the review and is accountable to the Selecting Official that the preparation and conduct of the review meets the Science Mission Directorate’s (SMD’s) established principles. Notably, the Program Officer shall:
 - 5.1.1 Ensure that all Federal laws and SMD rules and policies are followed during the review
 - 5.1.2 Ensure that the entire review process (participants, proposers, contents, discussions, etc.) is kept confidential
 - 5.1.3 Ensure that the review panel is convened in a timely manner that allows for completion of the review and notification of the proposer within 150 days from proposal due date.
 - 5.1.4 Appoint all reviewers, ensuring that they are competent in the fields in which they are assigned to evaluate proposals; ensure that all appointed reviewers are free from conflicts of interest (see SPD-01A, “Handling Conflicts-of-Interest for Peer Review”), lack biases that would prevent them from providing a fair evaluation, and will not be perceived as biased
 - 5.1.5 Approve all reviewer assignments
 - 5.1.6 Ensure the quality of the review process

- 5.1.7 Provide instructions to all reviewers (both panel and nonpanel reviewers) on avoiding conflicts of interest and on providing quality evaluations before individual reviews have been written and before the review begins its discussions
- 5.1.8 Explain to panelists where and how (usually on the server in the panel rooms) the contractors have made available electronic versions of the ROSES solicitation, the guidebook for proposers, and any additional documents that the reviewers will require if the call refers to extra evaluation criteria that refer to external documents (e.g., mission information in the case of participating scientist evaluations)
- 5.1.9 Remind all reviewers of the definitions of the evaluation criteria (on the evaluation form) with special attention drawn to any additions or modifications to the standard criteria
- 5.1.10 Approve all panel summaries ensuring that they are clear, concise, professional, and detailed enough to document each proposal's major strengths and weaknesses in order to inform NASA's selection process, as well as to provide feedback for the proposal teams
- 5.1.11 Prepare a selection recommendation (see SPD-08, "Requirements for Selection Decision Documents for NASA Research Announcements including ROSES") and present it to the selection official.

Note: For each panel in the review, the Program Officer may delegate some of the above items to the Panel Official.

5.2 All Reviewers shall:

- 5.2.1 Not disclose information about the review
- 5.2.2 Sign the nondisclosure agreement in NSPIRES before accessing proposals if not a Civil Servant. (Civil Servants are bound to confidentiality by law and the terms of their employment.)
- 5.2.3 Alert the Program Officer of any potential conflicts of interest or possibility of perception of bias in their evaluation of a proposal.

5.3 Panel Reviewers shall (in addition):

- 5.3.1 During the review, alert the Panel Chair to any potential conflicts of interest or bias in their evaluation of a proposal.
- 5.3.2 When serving as Primary Reviewer, lead the discussion and draft the panel summary.

- 5.3.3 When serving as Secondary Reviewer, participate in the discussion and assist in writing the panel summary.
- 5.3.4 Participate in (or, be attentive during) discussion of all other proposals before the panel, unless prevented by conflict of interest.
- 5.3.5 Ensure that panel summaries are clear, concise, professional, and helpful to NASA and the proposer.

5.4 The Panel Chair shall, in addition to his or her responsibilities as a panel reviewer or Program Officer:

- 5.4.1 Aid the Program Officer in recruiting reviewers and making review assignments as requested.
- 5.4.2 Ensure that all conflicts of interest raised are logged and adjudicated.
- 5.4.3 Lead or shepherd the discussions so that the panel stays on topic and on schedule.
- 5.4.4 Ensure that the panel summary and panel rating for each proposal reflects the panel's discussion and the text in the summary.

6. Managing the Peer Review Process

6.1 Uniform Instructions for Reviewers

Recognizing the great variation in programs across SMD, there will necessarily be a difference in the optimal instructions for each review. This section lists instructions that must be given uniformly to peer reviewers to ensure consistent high quality without compromising program uniqueness.

Prior to any panel meeting (when reviewers are asked to submit individual reviews through NSPIRES) **Program Officers shall:**

- 6.1.1 Emphasize to reviewers the importance of their service, their responsibility for assuring the success of the review, and the expectation of confidentiality.
- 6.1.2 Provide instructions to all reviewers on avoiding conflicts of interest, see SPD-01A.
- 6.1.3 Provide instructions on ensuring quality evaluations.

When each review convenes the Program Officer shall:

- 6.1.4 Remind panelists that all discussions shall take place within the panel or plenary room (this is especially important to emphasize when multiple panels are meeting at the same venue at the same time).
- 6.1.5 Remind panelists that they are to treat all notes and confidential material with prudence during the review and that all notes generated in the conduct of the review, including copies of the proposals that have been downloaded to the reviewer's own computer from NSPIRES, shall be destroyed prior to departure from the panel meeting.
- 6.1.6 Stress the importance of the avoidance of conflicts of interest and the appearance of bias by all reviewers.
- 6.1.7 Stress the importance of confidentiality that covers everything read and heard and who provided input. Even the dates of the review, though known by many, should not be disclosed without reason, since this may aid the curious in determining who participated.
- 6.1.8 Explain that the function of the peer review panel is to provide findings on individual proposals without comparing proposals, rank ordering proposals, or providing selection recommendations. Panelists must understand that NASA does not want them to come to consensus (unless they are composed of civil servants only).
- 6.1.9 The role of every reviewer in identifying issues that affect the quality of the review and the process for identifying issues to the appropriate review leader i.e., raising the issue in the panel review, to the Panel Chair, or to the Program Officer.
- 6.1.10 All reviewers shall be reminded of the definitions of the evaluation criteria (on the evaluation form) with special attention drawn to any additions or modifications to the standard criteria.
- 6.1.11 All panelists shall be instructed to assess all proposals on evaluation criteria in the same manner (e.g., on the same scale) so that there is uniformity.
- 6.1.12 Special attention should be drawn to instructing the peer review panel in the evaluation of relevance and/or cost reasonableness, especially if, as is increasingly common, it is different from the standard vote on a five-point scale.
- 6.1.13 The panel should evaluate whether the duration of the award at the proposed level of effort is justified. If not, the summary should include this weakness in the cost section.

- 6.1.14 Panelists must understand that NASA does not want them to come to consensus (unless they are composed of civil servants only).

The Panel Chair, Panel Official, and the Program Officer shall ensure that the panel summary provides sufficient detail to inform both NASA and the proposer of the major factors affecting the panel rating for that proposal are professional in tone and language and enable selection decisions.

6.2 Conduct of Panel Meetings:

The Program Officer and the Review Chief shall ensure that all panels hold proposals to the same standards.

- 6.2.1 The program officer shall ensure that the criteria used to evaluate the proposals are those described in the solicitation, i.e., if any additions or adjustments are made to the standard three (Merit, Cost, and Relevance) they should be described in the call. For example, if participating scientist proposals are to be evaluated on the necessity to be a member of the team to conduct the proposed work, or the extent to which the work complements that being done by the team, this must be explicitly stated.
- 6.2.2 Before discussion of any proposals begins, each panel reviewer shall identify potential conflicts and relationships that may give the appearance of bias. All potential issues shall be brought to the attention of the Panel Chair and the Panel Official or Program Officer for resolution and possible mitigation.
- 6.2.3 Each panel member shall report any real or potential problem situation, which may affect the quality of the review. The panel member should bring the issue to the Panel Chair or Program Officer's attention immediately. If the panel member is not satisfied with the Panel Chair's resolution of the issue, or if the panel member prefers to raise the issue privately, then the issue should be brought to the attention of the Program Officer as soon as possible. The Program Officer must always be available to resolve issues at meetings of review panels. Any issues shall be logged and included in the Selection Recommendation Package.

6.3 Panel Summaries:

- 6.3.1 Panel summaries shall be based on the full panel's discussion and rating from an absolute minimum of two unbiased panel members (the primary and secondary reviewers). More reviewers are strongly encouraged and three are required by some Divisions. For example, in general three panelists are required to read and vote on each proposal in Planetary Science, in the Astrophysics Division two is approved for GO programs only, but two panelists and a full panel vote are required in most Heliophysics programs.
- 6.3.2 The panel summary shall include all findings, strengths, and weaknesses that contribute to the proposal's overall rating. In addition, it may contain additional

findings that do not contribute to the proposal's rating but may nevertheless be of interest to the proposer.

- 6.3.3 The review panel shall incorporate all relevant findings from the individual reviews submitted by panel members.
- 6.3.4 The review panel is authorized to accept or reject, in part or in whole, any individual review from a nonpanel reviewer.
- 6.3.5 The review panel shall incorporate those comments from the individual reviews that they wish to communicate to the proposers into their panel summary.
- 6.3.6 Panel summaries shall contain an adjective rating (or ratings) derived from the combined ratings submitted by individual panel members. Typical is the approach in Heliophysics where the adjective rating derives from the median rating calculated from the votes of all unconflicted individual panelist's ratings after discussion of the proposal in the panel setting.
- 6.3.7 Any comments about programmatic considerations (6.5.3) should not appear on the portion of summary visible to the proposers, but should be in the notes to NASA section.
- 6.3.8 Panel summaries shall be approved and signed by at least two panelists in addition to the Panel Official or Program Officer. Normally these individuals would be the Primary Reviewer, one or more Secondary Reviewers, and the Panel Chair.
- 6.3.9 The Program Officer/Panel Official shall review the panel summaries and may edit them after the panel has met to remove remarks and phrases that are inappropriate or unhelpful while retaining the substantial intent or content of the evaluation finding.

6.4 Providing Panel Summaries and Status Updates to Proposers:

- 6.4.1 Each proposer shall be provided with the findings that formed the basis for the acceptance/rejection of the proposal (See Guidebook for Proposers, Section C.6). This is the final panel summary if a proposal was discussed in a panel. If the proposal was not discussed in a panel (e.g., in the case of an unsolicited proposal with moderate budget), then the program officer should either summarize or provide the individual reviews, if they formed the basis for the acceptance/rejection of the proposal. If individual reviews are provided to proposers then they should be edited down to just those comments that formed the basis for the decision. Program officers should take great care to ensure that erroneous or inflammatory comments are removed.

- 6.4.2 Proposers shall receive a status notification from the Program Officer concerning their proposal no later than 150 days after the (Step-2) proposal due date, if selections have not yet already been made and announced. Additionally, proposers shall receive a status every 60 days thereafter until selections are announced. Such status E-mails shall include a conservative indication of when selections are anticipated, but need not be specific.
- 6.4.3 Program Officers are permitted to provide panel evaluations prior to selection when circumstances warrant it, e.g., when proposers could have expected to have feedback to revise the submission for a related upcoming call. Moreover, on the rare and unfortunate occasions when selections are delayed so long that the annual due date for that same program in the next ROSES is approaching, Program Officers *must* provide panel evaluations to proposers well (> 6 weeks) in advance of next due of that of that ROSES program. It is unfair to call for proposals if we have not provided feedback from the evaluation of the prior submission.

6.5 Preparing the Selection Recommendation

- 6.5.1 Selection recommendations and decisions shall be documented in accordance with SPD-08, “Requirements for Selection Decision Documents for NASA Research Announcements including ROSES.”
- 6.5.2 Reviewers and review panels are neither expected nor allowed to formulate selection recommendations.
- 6.5.3 The selection recommendation should generally be consistent with the peer review findings, unless there are programmatic and/or other considerations such as:
- Programmatic priorities, including supporting research and technology for future missions;
 - Balance needed across subdisciplines, technologies, methodologies, project size, etc.
 - Innovative research needs that warrant selection of a low rated high risk but potentially high payoff investigation;
 - Inclusion of the breadth and diversity of the research community that can be achieved through the selection of a mixture of established and new investigators, public and private institutions, large and small teams, etc.
 - Additional factors such as support for graduate students, postdoctorals, or new investigators; and

- Affordability issues, such as finding several small investigations instead of one large investigation (even when the larger investigation has a higher review rating).
- 6.5.4 The rationale for recommendations that do not follow the review ratings shall be captured in the selection documentation including:
- The reason why highly rated proposals were not selected;
 - The reason why lower rated proposals were selected; and
 - The reason some proposals were selected over others with similar ratings.
- 6.5.5 The Program Officer should not change the rating of the panel or instruct the panel to change their rating, but rather should accept the rating from the panel and later explain in the selection document why a proposal is being taken out of order. This is not a prohibition against horizontal consistency checks across the week, rather it is a check on the Program Officer using the panel grade to hide a programmatic decision.
- 6.5.6 The Selection Official may fully follow the Program Officer's recommendation or may make different selections. In either case the rationale shall be captured in the selection documentation.
- 6.5.7 During debriefing, the Program Officer may tell the Proposer why a proposal was or was not selected, as long as such information does not disclose proprietary information from other proposals or disclose embargoed NASA information. If programmatic considerations were a part of the selection decision, then this may be included in the debriefing.
- 6.5.8 Any rationale that cannot or should not be explained to a nonselected proposer or the community at large should be avoided if at all possible. Transparency and the ability to convey the reasons for R&A selections are desired in SMD.